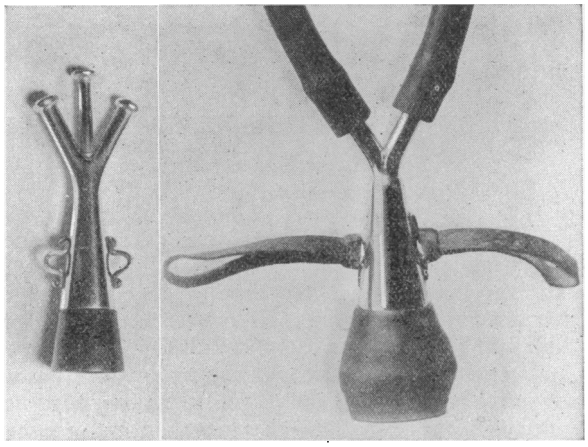

Fig. 1 Fig. 2

Fig. 1 shows brackets screwed on chest piece.
Fig. 2 shows brackets soldered on chest piece with rubber bands and nipple attached.

as disturbing the column of desirable sound. It should not be so stiff that manipulation of the chest piece is difficult. The bell, if used alone, should be of hard rubber; or if used with a nipple over the end, can be either hard rubber or aluminum. One needs only to be examined once or twice in a cool room with an aluminum bell chest piece to realize that there is not a little discomfort attached thereto.

No claim for the originality of the cut rubber nipple is here made. This device costs only about five cents, and being made of soft material, enables a contact to be made with very little pressure over the ordinary surfaces, as well as irregular surfaces such as the ribs. These nipples will wear for about three to four months.

Having discussed the majority of points prerequisite for a good stethoscope, there remains one that has been somewhat neglected; and that is the inspiration for the additional work on the stethoscope by the author. This relates to the method of insulating the desirable sound from the undesirable attendant's static. Doctor DeLee, in his text of obstetrics, states: "During auscultation with the usual stethoscope, nothing may touch the instrument save the skin of the patient and the ear of the examiner. Pressure with the fingers causes a faint hum which often completely covers the sounds. This may be obviated by holding the bell in place by means of rubber bands."

There remained one thing to be perfected, however, and that was the way these bands were to be applied. Bands were slipped through the crotch of the chest piece, fastening them to the two limbs or the thumb rest between the two limbs. This was not entirely satisfactory, because the center of gravity was below the point of attachment of the rubber bands and the stethoscope tended to sway. Hence, the chest piece was fastened between two knots tied in the rubber. This lowered the center of gravity, but it did not prevent slipping, the next factor to be overcome.

Two brackets were then attached to the chest piece, as illustrated. These can be either soldered or screwed onto the stethoscope. Although the center of gravity is a little below the point of attachment shown in the picture, room must be available below this point so that a slight downward as well as lateral traction can be made. These brackets are made from brass strips 5/32- to 6/32-inch wide, and 1/16-inch or less thick. They are bent either around a square or round piece of metal, so that the opening, when the bracket is fastened in place, is 3/16-inch in both directions. This gives a lumen a little less than 1/4-inch in diameter, which causes a 1/4-inch band to remain attached in place. The 1/4-inch rubber band seems to be the most desirable, as it is not big enough to transmit the vibrations and yet is not so small that it cuts into the fingers maintaining the tension. A bracket on either side of the chest piece permits the traction to be distributed to both the hands, and thus does not tire any one hand. Hence, there is not the necessity for shifting the grasp on the stethoscope, as is done, even though it may be subconsciously, when one hand is used on the ordinary stethoscope. At the time the traction is made upon the hands, the tubes of the stethoscope are made almost straight by the countertraction produced by the binaurals. In my own experience I find that the stethoscope is improved in efficiency from 10 to 25 per cent when the above conditions exist. It gives one much satisfaction when unsuccessful endeavors are made with the ordinary instrument in your own hands, or your colleague's, to use this improved stethoscope and hear the thing you or they were unable previously to discern.

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CARBONIC ACID GAS IN THE TREATMENT OF PNEUMONIA

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FIVE major developments in the physiology of respiration have focused attention on the possibilities of carbonic acid gas in the treatment and prevention of pneumonia.

1. Henderson and Haggard, in 1922, observed that a mixture of 5 per cent carbon dioxid and 95 per cent oxygen could be successfully used for the relief of asphyxiation in carbon monoxid (CO) poisoning, and that the incidence of its most common sequelae, namely, pneumonia, was greatly decreased.

2. Cruickshank showed that neonatal pneumonia developed in atelectatic areas in the lungs. Henderson's proposal (1922) that the lungs of newborn children should be fully dilated by the use of carbon dioxid gas resulted in a decrease in the incidence of neonatal pneumonia in those maternity hospitals where the procedure was followed.

3. Postoperative pneumonia has been associated with atelectasis of lobes or lobules, or appears after massive collapse of the lungs. By the use of inhalations of carbonic acid gas these complications which lead to postoperative pneumonia can be eliminated.

4. Corryllos (1928 and 1929) showed the very important relationship of atelectasis and massive collapse to pneumonia, and introduced a newer conception of pneumonia, namely, atelectasis of the lung, lobe or lobule, and secondarily, the growth of bacteria in the occluded lung, lobe or lobule.

5. Henderson, Corryllos, and coworkers, in 1930 reported a series of artificially induced pneumonococcic pneumonias in dogs, following atelectasis of a lobe. These were successfully treated by the inhalation of an atmosphere containing 5 per cent carbon dioxid.

Since 1930 the writer has used carbon dioxid gas exclusively in the treatment of pneumonia. One hundred per cent carbon dioxid gas was administered by the drip method (no mask being used), through a rubber tubing of small caliber held about one inch above the nose or mouth, the gas flowing at the rate of about four liters per minute. (In the absence of a flow meter, a steady, soft stream was used, hitting the hand without force.) A stiff linen towel folded lengthwise was wrapped around the head from the chin to the vertex, thus forming a shallow cup, with the face as the base. The gas was administered until a hyperpnea developed, which was obviously out of the patient's control. The hyperpnea was continued under the gas for about a minute, and the flow then stopped; but the towel was not removed from the face. It was noticed that the hyperpnea continued for a variable length of time after the gas was discontinued. After a three- to five-minute rest, the gas was administered a second time and a similar hyperpnea induced. This procedure was repeated every three to four hours, until the temperature became normal.

The first few breaths of gas caused the patient to cough. After the administration of the gas was completed, a severe paroxysm of coughing usually set in, and the patient brought up surprisingly large quantities of yellowish sputum. The effort was extremely fatiguing, and the patient often fell into a sleep of exhaustion. However, he awakened later with a feeling of well-being, and refreshed all out of proportion to the degree of illness which had been previously evaluated to be present. The recipient of the gas often involuntarily stated that he felt better from the time the first inhalation was given.

Within twenty-four to thirty-six hours there seemed to be a marked decrease in the toxicity of the illness, and by the time the temperature became normal again—usually on the third day—the patient looked well enough to get out of bed. In fact, he had a feeling of well-being which was tremendously out of proportion to the physical signs of the disease in the chest. The process in the chest showed signs for several days after defervescence had become completed.

The signs of resolution in the lobar pneumonias began within four to seven days after the first administration of the gas, and in three to five days in the bronchopneumonias.

At this point, mention must be made of a small number of patients whose illness was ushered in abruptly with severe prostration, high fever, and marked cyanosis. To all external appearances these patients were suffering from pneumonia, but the physical signs were only those of dullness to flatness, and suppression of the breath sounds with or without suppression of vocal sounds at one base. These patients were clinically well within twenty-four hours after carbon dioxid gas inhalations were begun. They undoubtedly represent the pure atelectatic stage, which Coryllos pointed out precedes and ushers in true pneumonia.

Complications in the form of diplopia in one patient and the mask facies of encephalitis developed in two patients. In both instances this occurred on the third day after three hourly administrations of the gas in adults of small proportions and light weight. These complications disappeared after several days, without any permanent sequelae.

The use of the gas was attended with great difficulty in the aged, and when evidence of disease of the ventricular muscles was present. In such instances a severe dyspnea was induced and the beneficial aerating influence of the hyperpnea was not obtained. However, two successful instances in this series occurred in ages over eighty.

The use of carbon dioxid was successful in both types of pneumonia, as described. In the four-year period covering these observations, in approximately one hundred instances (about one-fourth of these consisted of personal communications) there was one death and failure in three instances of the defervescence to occur, as anticipated.

It must be emphasized that these bedside observations were recorded on patients in whom the clinical or roentgen-ray diagnosis was made and the treatment begun, in most instances within twenty-four hours or less after the first chill.

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The Tragedy of Man.—The tragedy of man is that he has developed an intelligence eager to uncover mysteries, but not strong enough to penetrate them. With minds but slightly volved beyond those of our animal relations, we are tortured with precocious desires to pose questions which we are sometimes capable of asking, but rarely are able to answer. We have learned to dream of conquests of the forces about us; we investigate matter and the energy that moves it, the order that controls the worlds and the sun and the stars; we train our minds inward upon themselves, and discover emotions, ethical desires, and moral impulses—love, justice, pity—that have no obvious relation to mere animal existence. The more we discover, the greater is our hopelessness of knowing origins and purposes. The more our ingenuity reveals the orderliness of the nature about us and within us, the greater grows our awe and wonder at the majestic harmony which we can perceive more clearly with each new achievement of art or of science, but which —in ultimate causes or in goal—eludes us. To feel this awe and to wish to fit into the harmony of natural things, with a vision of the whole, is apparently a definite phenomenon of human psychology.—Hans Zinsser in *Rats, Lice and History.*

There is an idea abroad among moral people that they should make their neighbors good. One person I have to make good: myself. But my duty to my neighbor is much more nearly expressed by saying that I have to make him happy if I may.—Robert Louis Stevenson.